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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Polio Protection

See Page 239

A SCIENCE SERVICE PUBLICATION

## BIOLOGY

## Man Walks Upright Because of Snow, Ice

► **MAN WALKS** upright because of snow and ice. And his adrenal glands, best known popularly because they produce anti-arthritis cortisone, help him do so.

This theory was presented at the meeting of the Federation of American Societies for Experimental Biology in San Francisco by Dr. Sydney W. Britton of the University of Virginia, Charlottesville, Va.

Chimpanzees gave Dr. Britton evidence for his theory. He has been studying three of them in Africa, England and at his home in Virginia.

Although they preferred the woods, they learned to live freely with Dr. Britton and his family in their home. They were tamed to submit to blood pressure measurements, injections, and other necessary procedures.

"On the ground they normally traveled on all fours," Dr. Britton reports. "They stood upright when they were excited or wanted to look around, and they walked on their hind feet over rough, wet, icy and especially over snowy ground."

Dr. Britton discovered that when held loosely on a tilt-table they could remain upright about eight hours. Toward the end of the period he observed losses of reflex action, decreases in blood pressure, signs of a lowering output of the cortex of the adrenals, and finally unconsciousness.

One chimpanzee, from which the adrenals were removed, could remain upright only two hours within a week of the operation, and after that only 30 minutes, although the animal generally appeared in good condition. But heavy dosage of extract from the adrenal cortex at first lengthened and in time completely restored the animal's ability to stand.

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## MEDICINE

## Male Hormone Called Possible Cancer Cause

► **THE MALE** sex hormone was today implicated as a possible cause of cancer.

Heretofore scientists have generally agreed that the female sex hormone probably has cancer-causing properties and have suspected the male sex hormone of the same.

The suspicion grew stronger on the basis of a Syrian hamster found to have a transplantable liver cancer. The animal was the only one of more than 2,000 showing the cancer. It was one of 14 females whose ovaries had been removed and which had had male sex hormone treatment.

The finding was reported by Dr. Hadley Kirkman and Miss Marilyn Robbins of Stanford University at the meeting of the American Association for Cancer Research in San Francisco.

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**ONE-MAN FLYING PLATFORM**—Test pilot Phil Johnston controls horizontal flight of this revolutionary flying machine by merely shifting his weight. Developed by Hiller Helicopters, Palo Alto, Calif., the platform is held in the air by counter-rotating propellers inside the casing.

## AERONAUTICS

## Circular Platform Flies

► **MAN'S DREAM** of a personal flying carpet has been partially fulfilled with the Navy's announcement that a one-man wingless platform has made short successful flights.

The circular platform, about as wide as a man, is held in the air by a set of counter-rotating propellers hidden under the device, which suck air through holes in the platform.

Designed and built by Hiller Helicopters, Palo Alto, Calif., it has not flown more than a few feet from the ground. The revolutionary platform is stabilized and controlled by the same instinctive reactions a person uses to stand upright. The pilot just leans in the direction he wants to go. This new system for lift and propulsion is called the ducted fan.

Further research and development will be necessary before these principles can be applied in the production of military aircraft.

The device is covered at the side with a circular casing which protects the pilot from the propeller blades. Four short legs support the device on the ground.

The pilot stands inside a ring of metal about as high as his waist supported by four poles on the platform. Controls are connected to this stand.

Two separate engines, which together

develop less than 100 horsepower, turn the propellers.

Parts of the engines can be seen at the surface of the platform.

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## MEDICINE

## Radioactive Yttrium Checks Fluid in Cancer

► **A NEW**, safer atomic medicine has helped 15 cancer patients with fluid accumulation, Drs. Elsie Siegel, Hiram Hart, Milton Brothers, Herta Spencer and Daniel Laszlo of Montefiore Hospital, New York, reported at the meeting of the American Association for Cancer Research in San Francisco.

The medicine is radioactive yttrium 90. The New York doctors tried it for cancers of the lining of the chest or abdominal cavities. Promising results with apparent check to the fluid accumulation were obtained.

This radioactive chemical expends half its energy in 60 hours. It is non-toxic and safe for both patients and personnel handling it. An additional safety measure for the patient is the existence of chelating chemicals which can rapidly remove the isotope from the body.

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## MEDICINE

# Polio Protection for Life?

Statements give hope that a single series of anti-polio "shots" may be effective for long periods of time, perhaps for a lifetime. Must guard against possible new strains of virus.

## See Front Cover

► THE BEST thing about the Salk polio vaccine, apart from its safety, is its promise of long-lasting, maybe life-long protection. While it may take a few years to be certain of this point, two statements about the vaccine give this promise.

One is that of the vaccine's maker, Dr. Jonas E. Salk of the University of Pittsburgh. The level of polio-fighting antibodies induced by the vaccine when the booster dose is given seven months or longer after the first, priming "shots" is higher than that in persons who have had an attack of paralyzing polio, he said.

Second encouraging statement on the vaccine's long-lasting effect came from Dr. William C. Workman of the Laboratory of Biological Control, National Institutes of Health. He said:

"It is a reasonable hope that, as in diphtheria, natural exposure to the poliomyelitis viruses will continue to reinforce the immunity induced by vaccination, but experience, possibly of some years, will be required to establish this."

Continued vigilance will be needed, Dr. Workman said, to be sure there is not in the future a change in the polio viruses we now have, or even the development of new strains. This sort of thing has handicapped production of vaccines against influenza, making it almost impossible to produce one that would be effective against the particular strain that might appear in a given epidemic.

The cover of this week's SCIENCE NEWS LETTER shows how the Salk vaccine is prepared in the specially-built laboratories of Parke, Davis and Co. Three strains of poliomyelitis virus are grown separately, then pooled. The mixture is drawn from the pooling tank into large storage bottles and is refrigerated until the safety and potency of each lot have been determined.

Looking toward the future of vaccination against polio and other virus diseases is the fact that scientists now have a "base line for the future." There is no guesswork and can be no "fuzzy or iffy allowances," declared Dr. Thomas M. Rivers of the Rockefeller Institute for Medical Research. The field trial involving nearly two million children and the evaluation procedure followed by Dr. Thomas Francis Jr. of the University of Michigan show the way to get the facts about the safety and efficiency of any future vaccines.

"Sorely needed" for the future, Dr. Workman said, is a simple test to tell quickly which child or expectant mother or other

person is immune to polio and which needs the vaccine. This would help greatly in making best use of the available amounts of vaccine.

Hope that polio might be eradicated from the population even before universal vaccination of the population was expressed by Dr. David Bodian of the Johns Hopkins University, Baltimore. He based this on "incomplete but suggestive laboratory experiments."

If the vaccine tends to eliminate polio virus carriers as well as paralytic cases, the hope would certainly come true.

The good news about the Salk polio vaccine is triple good news. First, of course, is the fact that it works and is safe. Second, the fact that it is "extremely effective" against the most severe, most often killing form of polio, bulbar polio. Third, it protects against family exposure. This can mean the end of the family tragedies in which one child after another fell victim to polio's onslaught, with each subsequent patient more likely to be paralyzed by the disease.

The 80% to 90% efficiency rating Dr. Francis gave the present vaccine makes it about as good as a vaccine can be. No vaccine has ever been 100%, and none is expected to be, since there are some persons who cannot be successfully vaccinated. This

is because their bodies cannot make antibodies to fight invading disease germs or viruses.

Children who will get the vaccine this year should get only two shots, Dr. Jonas E. Salk, University of Pittsburgh scientist who made the vaccine, has stated. The third booster shot should not be given until at least seven months later. If this schedule is followed, the vaccinated child should be immune to polio for "an indefinite period, perhaps years." All children who got the vaccine last summer should get a booster shot this year, Dr. Salk stated, because the three "shots" given last year within a five-week period would not give the lasting immunity that can come from a booster shot months after the primary vaccination.

Vaccinations of school children this year with vaccine supplied by the National Foundation of Infantile Paralysis will follow this schedule. Children who got three shots of vaccine last year will get the booster shot now.

One feature of Dr. Francis' report that will be especially reassuring to doctors is the fact that the areas picked by the National Foundation for Infantile Paralysis for the field trials last summer were so well picked that there could be no doubt of the vaccine's effectiveness on the grounds of where it was tried.

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## • RADIO

Saturday, April 30, 1955, 5:00-5:15 p.m., EDT

"Adventures in Science," with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. W. S. Middleton, chief medical director, U. S. Veterans Administration, will discuss "Mental Health Week."

## MEDICINE

# Polio Danger for Babies

► BABIES AND small children under five may bear the brunt of polio in the next year.

Unless special steps are taken, many of them will not get the famous Salk vaccine to protect them against the disease.

These neglected little ones are in the ages when polio, if it strikes, is most likely to paralyze.

Present plans call for vaccination of children in the first three grades of school who did not get the vaccine last year. The National Foundation for Infantile Paralysis will provide the vaccine for this.

Older and younger children can be vaccinated by the family doctor or the pediatrician. However, with the cost of three "shots" of vaccine estimated at \$6 plus the physician's fee for giving the vaccine, many parents, especially with large families, may not be able to afford the vaccine for their children.

Babies and small children who are taken to health department child health clinics,

for example, will not get the vaccine in most cases. A few health departments may be able to spare funds for this and some local chapters of the National Foundation for Infantile Paralysis might provide funds. This, however, is not yet definitely known.

Among children aged five to ten years, about 60% of all cases of polio are paralytic polio. The other 40% are non-paralytic. This figure is reversed among the small fry. Under age five, about 70% of polio cases are paralytic, with about 30% escaping paralysis.

More children in the older age groups probably get polio. For one five-year period, for example, one state reported cases of all kinds of polio attacked babies under one year at the rate of 10 per 100,000 population. From ages one to four, the rate was 30 per 100,000. At ages five to nine the rate was 45 per 100,000, with many non-paralytic cases included. After age ten, the rate began falling. In the 10 to 14 group it was 42 per 100,000.

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## PSYCHOLOGY

# Not Seeing Plays Tricks

► THE STRANGE pulsating world that awaited three scientists after they had spent six days and nights shut away from all perception of sights, sounds and feelings was described to the meeting of the Eastern Psychological Association in Philadelphia.

The six days were spent in bed in a lighted, semi-soundproof cubicle. Sounds were additionally muffled by a U-shaped foam rubber pillow and masked by the monotonous hum of the air conditioner. A transparent plastic mask allowed the men to see light but prevented them from making out the forms of any objects.

On coming out of the isolation, they were staggered by an unstable world. Walls appeared to be moving in and out and objects seemed to be changing both in size and shape. If they looked fixedly at any object for any length of time it appeared to expand and contract.

Horizontal lines seemed to curve down-

ward at the ends. And when a straight line was spun around through a complete circle, the ends seemed to lag behind so that the line looked S-shaped.

When they moved head or eyes, things they were looking at seemed to move. When they stepped toward an object or withdrew, the object seemed to go to and fro.

Colors looked much brighter than they had before the isolation.

Psychologists B. K. Doane, W. Heron and T. H. Scott of McGill University, Montreal, Canada, voluntarily served as the human guinea pigs in this unusual experiment.

During the six days that they were shut away from sights, sounds and feelings, all the investigators reported that they had vivid hallucinations.

The strange movements of everything they saw on emerging disappeared in a short time although some distortions persisted for over 24 hours.

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## CHEMISTRY

# Molybdenum Still Mystery

► A VERSATILE metal, still practically unknown although discovered more than 150 years ago, was described as a puzzle to chemists at the American Chemical Society meeting in Cincinnati. Six series of compounds of this unusual element are known, besides other, less orthodox kinds of associations with other elements.

Molybdenum has only recently been recognized as necessary in soil for proper plant growth, Dr. E. R. Purvis of Rutgers University, New Brunswick, N. J., told the meeting. Symptoms of malformed and spotted leaves, long ago believed due to some plant disease, have now been proved to be caused by lack of molybdenum in the soil. This element apparently helps the plant feed on nitrate compounds in the soil.

The steel industry was the chief user of molybdenum until recently, since a little of this element gives special qualities to tool steels. Corrosion-resistant properties of these special steels were described by Dr. J. Z. Briggs of Climax Molybdenum Co., New York City, while use of molybdenum coatings to protect ordinary iron articles was explained by Dr. Donald Price, also of New York.

Use of molybdenum compounds as pigments in paint, combined with both organic and inorganic chemicals, was described by two chemists of the pigment color division of the Imperial Paper and Color Corp., Glens Falls, N. Y. Manufacture of these pigments draws on new understanding of the chemistry of this unusual element.

Describing the complexities of molybdenum chemistry, Dr. D. H. Killefer, New York chemist, told the meeting that it was

impossible for the eminent chemists who discovered and did the early work on molybdenum to resolve the chemical problems of the strange element, and that only now by the most modern methods of physical chemistry has a beginning been made on solving its puzzles.

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## PSYCHOLOGY

# Men Who Want to Be Women Fear All Sex

► MEN WHO want to be women and beg doctors for mutilating operations, really do not know what women are like. They have a horror of the nude female body and have avoided looking at it even when married.

These are among findings reported by Drs. Frederic G. Worden and James T. Marsh of the University of California School of Medicine, Los Angeles, in the *Journal of the American Medical Association* (April 9).

"We have not yet found one subject who has a realistic idea of what a woman is like," the doctors state. "They all show an extremely shallow, immature and grossly distorted concept of what a woman is like socially, sexually, anatomically and emotionally."

The men these doctors examined have intense conflicts about sexual matters and are afraid of their own sexual impulses. They seem really to want operations with the idea that they will then become sexless.

One said he would like to be without sex but regarded himself as a woman.

The urge to be women and to wear women's clothes seems to result from the "desperate hunger" these men have for attention, recognition and acceptance and to a marked feeling of being rejected and ignored. In some of the tests they tell of wanting to have "beautiful evening gowns and dresses and being able to go to parties" and of having people notice them.

The men's backgrounds were extremely varied. Some had wealthy parents, some very poor ones. Some had brothers and sisters, others were only children. All had distorted memories of their childhood, highlighting those things that supported their ideas of having been female since birth.

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## MEDICINE

# Move Glands in Cancer

Eleven breast cancer patients have been helped by a revolutionary operation in which the ovaries were removed and the adrenal glands relocated inside the abdomen.

► **RELOCATING THE** adrenal glands, famous as sources of anti-arthritis cortisone, has given a longer lease on life to 11 patients in far advanced stages of breast cancer. Some have lived as long as two years and continue to improve.

The dramatic results of this new operation were reported by Drs. Donald E. Bernstein, Gerson R. Biskind and A. Lincoln Brown of Mount Zion Hospital, San Francisco, at the meeting of the American Association for Cancer Research in San Francisco.

One patient, 51 years old, had her breast removed two years previously. She was brought to the hospital to die, with so much fluid in her chest from the renewed spread of cancer that she was unable to lie down and had to sleep sitting up. She was operated on 16 months ago. She has now gained 30 pounds and is leading a relatively active life.

Another patient, only 46 years old, who had her breast removed two years before for cancer, came into the hospital when her cancer reappeared and spread into her lungs. The spread was so extensive that large masses, some of them the size of walnuts, could easily be recognized by X-ray. A few months after the operation these lumps had completely disappeared and she is now doing well 16 months after coming into the hospital in what seemed to be the end stage of the disease.

The operation which has been helping these women consists in removing both ovaries and transplanting the adrenals from their location above the kidneys to another structure within the abdomen called the mesentery. This location lets the liver act as a sieve to filter out cancer-stimulating hormones and at the same time allows products of the adrenals necessary to life to remain.

Doctors have known for a number of years that removal of the ovaries would slow down breast cancer. More recently they have found that removal of the adrenals also slows the cancer. Since cortisone and other adrenal gland hormones have become available some doctors have removed these glands, giving the hormones to compensate.

The Mount Zion doctors have gone a step further and relocated the adrenals. Most of these patients can get along with less of the hormones than patients whose adrenal glands are completely removed from their bodies.

So far the operation has been done on 17 patients with critical or terminal cases of breast cancer. Two died immediately after the operation and four within 45 to 200

days after. Of the remaining 11, four have been observed less than one year. Seven have been observed for 12 to 24 months. The oldest case did show reactivation of the cancer after 16 months. The others continue to improve at the present time.

The operation resulted from 15 years of animal investigation at Mount Zion laboratories where it was shown that:

1. The liver inactivated sex hormones.
2. That experimental cancer resulted when male or female sex glands were transplanted in such a way that the hormones they produced were filtered through the liver before distribution throughout the body.

3. That an adrenal gland similarly transplanted grew and maintained the life of the animal. It was then found that simultaneous grafting of both of these glands (the adrenal and the ovary) in some animals prevented the development of the experimental cancer. It was these findings that suggested this new approach to the treatment of terminal cancer of the breast.

This is a new procedure which has given added years of life to a number of patients and has demonstrated that the adrenals may successfully be grafted in human beings. Whether or not it will have an important place in the treatment of terminal cases of breast cancer will only be determined after the study of many more patients for a longer period of time.

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## STATISTICS

## Most Accidents Occur While Away From Work

► **MORE ACCIDENTS** occur when people are not at work than when they are working.

Accidents at home, on the streets and highways, and during recreation account for nearly 70% of the accidental deaths and more than half of the disabling accidents, a compilation of statistics on male industrial insurance at Metropolitan Life Insurance Co. shows.

In some occupations all or nearly all the fatal injuries were sustained off the job.

Examples of such groups are workers in cotton or woolen mills and in furniture factories, barbers, and operatives in shoe and clothing factories. For white collar workers, such as clerks and other office workers, merchants and storekeepers, and store clerks and salesmen, fewer than one in ten of the accident fatalities arose in the course of their employment.

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**HEAD CHARTED**—This contour map of a man's head will help the Air Force design oxygen masks and helmets that really fit. Even the small depression from the rubber band holding the skull cap shows up clearly.

## PHYSIOLOGY

## New Camera Can "Map" Curves of Human Figure

► **A MACHINE** that can map photographically the curves of the human figure was reported to the meeting of American Association of Physical Anthropologists.

Flyers' helmets and oxygen masks will probably fit better and be more comfortable as a result of precise measurements made of men's heads and faces with this new device.

Reported in Philadelphia by H. T. E. Hertzberg and Lt. Frank P. Saul of the Aero Medical Laboratory, U.S. Air Force, the new instrument is called the Lange-U.S.A.F. Contourometer. It can make a "topographical map" of a man's head and face and thus yield better measurements than the calipers and other instruments used previously.

The contourometer is basically a camera with attached light sources mounted on each side of the head so that a thin sheet of light is exposed in brief flashes. The traces made when the light sheet intersects with the surface of the skin are recorded by the camera to sketch the "map."

Although used so far on the heads and faces of Air Force men, the contourometer can be adapted to make precise measurements of other parts of the anatomy and to aid in dental and physiological research.

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## ASTRONOMY

# Up Distance to Nebula

▶ A NEW distance—14 billion billion miles—to the Andromeda nebula, the nearest pinwheel-like galactic neighbor of the Milky Way, was reported to the American Astronomical Society meeting in Princeton, N. J., by two astronomers from Mt. Wilson and Palomar Observatories, California.

Miss Henrietta H. Swope and Dr. W. Baade made careful counts of the different kinds of variable stars in three regions of this galaxy, using photographs taken with the 200-inch telescope at Mt. Palomar. Based on these counts, they concluded that Andromeda is 2,300,000 light years away.

The new distance is one-half again as much as was recently thought. In 1952, astronomers revised the distance scale for the observable universe (see SNL, Jan. 10, 1953, p. 19), concluding that Andromeda was 1,500,000 light years away, double what had previously been thought.

The 1952 revision was based on a change in the brightness scale of the variable stars known as Cepheids. The new distance is based on improvements in measuring brightness of all types of variable stars, particularly the Cepheids, in Andromeda nebula itself, and affects only that galaxy. (See SNL, Jan. 1, p. 3.)

Dr. Baade also reported the discovery of planetary nebulae in Andromeda, the first such objects found outside the Milky Way galaxy. Planetary nebulae are so named because they look disc-like through a telescope, as solar system planets do.

The Palomar astronomer spotted them in Andromeda by comparing photographs using two filters, one that cuts down the green lines emitted by planetary nebulae, and another that emphasizes these lines in the spectrum.

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## MEDICINE

# Vaccine for Cold?

▶ THE TRIUMPH of the Salk vaccine over poliomyelitis leaves still a number of diseases to be conquered.

They range from cancer to the common cold. They include heart and artery and kidney ailments, mental diseases and a host of diseases of nerves and muscles that cripple. Muscular dystrophy, multiple sclerosis, Parkinson's disease better known as shakiness, and the hereditary bleeding disease, hemophilia, are on the list of those we have still to beat.

The success of the polio vaccine encourages hope that a vaccine or vaccines to stop the common cold might not be too far off. Colds, like polio, are caused by viruses. The tissue culture technique for growing viruses outside the body which did much to make the polio vaccine possible is being applied to study of the viruses that cause the coughs, running noses and eyes that most of us call a cold. So success in the fight against colds and other unconquered virus diseases seems a reasonable expectation.

The great killers, heart disease, cancer and leukemia, may take longer to stop. For conquest of at least one kind of heart disease, however, scientists are now fairly confident of success. This is rheumatic heart disease which in the past has been a far greater scourge of children and young adults than even polio. With sulfa drugs, penicillin and other antibiotics to halt the streptococci that seem to start rheumatic heart damage, this killer and crippler may be stopped as polio now will be.

Arthritis, the greatest crippler of all, has yet to be really conquered, although cortisone and all the newer drugs give relief to many and hope of more to come. For this disease and for the dystrophies and multiple

sclerosis and other nerve and muscle disorders, more searching is needed to learn causes and then, perhaps, cures or preventives.

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## MEDICINE

# Japanese Abortions and Fare Cheaper Than U. S.

▶ AT THE advertised \$966 round trip fare, an American woman could fly to Japan, "have an abortion job done, and then return home, happy, all at a cost below that often charged for the abortion operation alone in such cities as New York and Chicago."

So declares Dr. W. T. Pommerenke of the University of Rochester School of Medicine and Dentistry on the basis of observations on a mission to Japan sponsored by the Unitarian Service Committee.

The Japanese woman who has an abortion, often at less than the New York City taxi fare to a hospital, "pays with her body," however. The costs are to be reckoned, Dr. Pommerenke says, in hemorrhage, leucorrhea, pain, fever, anemia, ill-defined general impairment of health, sterility and death.

As many as a million abortions are performed annually in Japan, with one unborn baby being sacrificed for every one born alive. Under most conditions, abortions are legal in Japan and a licensing system permits physicians to engage exclusively in the practice of abortions. In addition there are numerous clandestine institutions and practitioners.

In test areas the idea of birth control, instead of abortion, to hold down the popula-

tion and to save families from more children than they can afford, has been accepted, Dr. Pommerenke reports. He urges that the Japanese government make further efforts along this line.

His report appears in the *Obstetrical and Gynecological Survey* (April).

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## GENERAL SCIENCE

# Physicists Prefer Non-Secret Research

▶ YOUNG PHYSICISTS prefer to do research not requiring governmental security clearance, Dr. M. Stanley Livingston, physics professor of Massachusetts Institute of Technology, revealed.

Security system abuses have "alienated" recent Ph.D.'s significantly, he found in a survey. Nearly half of those answering the questionnaire indicated "a distrust of security procedures and an urge to avoid" becoming involved in them.

Their answers do not mean a concern over their own clearability nor that they will not do defense work, Dr. Livingston pointed out. Results of the survey, made from May to September, 1954, are reported in *Physics Today* (April).

During this period the security clearance case of Dr. J. Robert Oppenheimer was prominent in the news, which probably affected some answers, Dr. Livingston said. He believes the results are, nevertheless, "significant," since they reveal this situation statistically for the first time.

The 61 young physicists answering the questionnaire make up about 15% of the annual crop of Ph.D.'s. They came from large academic research institutions.

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## PSYCHOLOGY

# Dreams, Deep Sleep Come Early in Night

▶ SHORT DREAMS and deep sleep come early in the night. The usual pattern of a night's sleep consists of periods of heavy sleeping of 60 to 80 minutes length, with deepest sleep in the first of the periods.

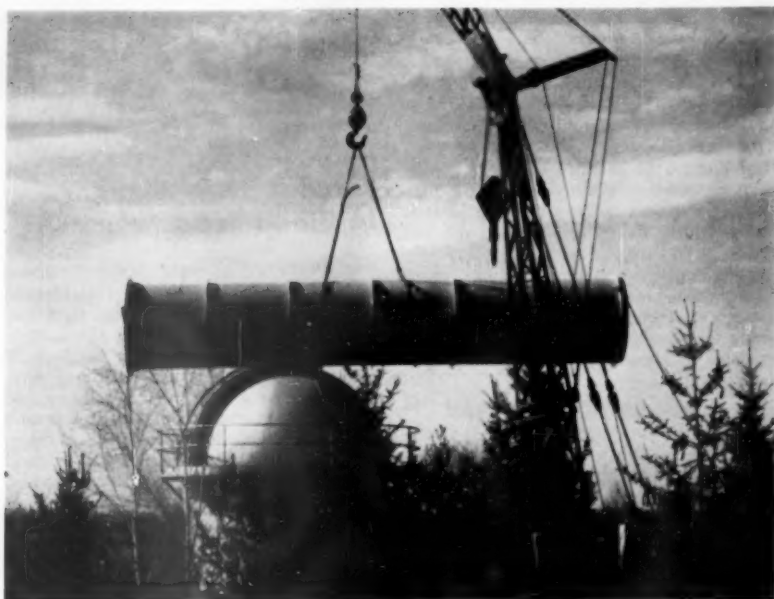
Brain wave and eye movement recordings showing depth of sleep and length of dreams were reported to the Federation of American Societies for Experimental Biology meeting in San Francisco by Prof. Nathaniel Kleitman, University of Chicago physiologist, and William Dement, medical student.

Eye movements, associated with dreaming as previous experiments had shown, increased as the night wore on in tests on 16 males over a period of 43 nights.

Early in the night the dream periods were eight minutes long. They progressively increased to 16, then 22 and finally 24 minute periods.

In between the deep sleep periods, the brain wave patterns tend to resemble those found during waking moments.

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**SPECTROGRAPH TUBE**—Crane carries 52-foot-long cylinder for the giant spectrograph at the University of Michigan's McMath-Hulbert Observatory. The tube is four feet in diameter and will be a major part of the device to analyze the chemical composition of the sun.

#### PSYCHOLOGY

## Canaries Have High I. Q.

► CANARIES HAVE surprised psychologists with their intelligence in tests at Queens College, Flushing, N. Y.

Out of sight is not necessarily out of mind with these bright birds, Dr. Nicholas Pastore told the meeting of the Eastern Psychological Association in Philadelphia.

When 22 identical objects and one that was different were equally spaced around a tall cylinder and a morsel of food was hidden under the odd object, the seven canaries tested learned to hop around the cylinder until they came to the odd object under which the treat was hidden. They would do this even though at the start of the experiment the odd object was hidden from their view by the cylinder. They mastered this problem in about 100 tries.

Another trick learned by the birds was even more remarkable. This involved pulling a string-drawn "truck" until it was alongside a bin holding a hoard of bird treats. To move the truck, the bird had to tug on a string emerging through a hole in an opaque screen that hid both truck and bin from him.

First the bird was allowed a look at the truck to size up its distance from the bin. Then the canary went behind the screen and pulled the string. Four different distances between truck and bin were used in the experiment. Sometimes one tug would bring them abreast of each other. At other

times it would take two, three or four tugs.

One bird learned to pull the required number of tugs and then hop to the truck and perch on it to get his reward. Another bird learned the problem but for only two different distances.

Two birds could not go through the experiment because they developed fear of the whole situation.

Science News Letter, April 23, 1955

#### MEDICINE

## Amplify Joint Squeaks To Detect Diseases

► NORMAL JOINTS in the human body move silently, except for the familiar "cracking" at times, but in arthritic and other diseases they may squeak or otherwise make noises. These noises are too slight to be heard, but scientists of the Canadian Department of Veterans' Affairs at Toronto are picking up these noises by amplifying them several thousand times.

The amplification is easily done by using a standard electrocardiograph machine routinely available in hospitals for measuring electrical potentials of the beating heart.

The noises in knee and other joints make possible the localization, measurement and permanent recording of abnormalities.

Science News Letter, April 23, 1955

#### ASTRONOMY

## Sun's Sodium Lines To Test Spectrograph

► THE SODIUM lines of the sun are being used to test a new 50-foot vacuum spectrograph at the University of Michigan's McMath-Hulbert Observatory. Dr. Robert R. McMath told the American Astronomical Society meeting in Princeton, N. J., in his address as retiring president.

The instrument, the only one of its kind in the world, is now being given its final installation tests on the many lines in the rainbow-like solar spectrum. The bright yellow line characteristic of sodium can be seen when salt, or sodium chloride, is heated in a flame.

Other lines used to test the new instrument include those of mercury, iodine, magnesium and potassium, Dr. McMath reported.

The device has a resolving power of 600,000, which means it can separate one part in 600,000.

Science News Letter, April 23, 1955

#### BIOPHYSICS

## "Assembly Line" of Life Photographed

► NOT VISIBLE under ordinary microscopes, what appears to be a highly organized "assembly line" for the basic materials of life has been photographed for the first time.

The work is reported from the division of cell biophysics in the University of California at Los Angeles Medical School and is a continuation of joint research by the late Dr. O. L. Sponsler of the botany department and Dr. Jean Bath.

Highly magnified electron microscope photos of the naked protoplasm of slime mold, a classic protoplasmic material, were made. The specimens were not treated chemically or sectioned, and are thus expected to appear more like they exist in nature.

In addition to fibrillae the photos revealed tiny particles of a variety of shapes and internal structures. These particles are not visible under ordinary microscopes. Some of them contained several "reaction" chambers. On the walls of the chambers were small nodules.

The nature of the chambers suggests that they may be part of a highly organized production line. The nodules are perhaps enzyme complexes which help process raw materials into the complicated substances necessary for life processes within the cell.

Other particles appearing in the protoplasm exhibited within them regular arrays of dark bodies of uniform size. The density of the particles indicates they may contain nucleic acid. Thus the dark bodies may have a gene-like function and, therefore, may help to determine characteristics of the cell cytoplasm.

Science News Letter, April 23, 1955



## ANTHROPOLOGY

**Natchez Man's Antiquity Confirmed in New Tests**

► **ANTIQUITY** OF Natchez Man, one of America's most ancient men, who lived in what is now Natchez, Miss., some 11,000 years ago, has been confirmed by a second analysis of the fluorine in his bones.

The new analysis of the bones of Natchez Man and the extinct ground sloth, *Myiodon darwini*, buried with him was made by the British Government Chemical Department. Results were reported by Dr. M. F. Ashley Montagu of Princeton, N. J., to the American Association of Physical Anthropologists meeting in Philadelphia.

Natchez Man was first dated by the fluorine method by Thomas Wilson, then curator of the National Museum in Washington, in 1895. At the time, this ancient American created quite a stir in scientific circles.

Finally, Natchez Man and his antiquity were virtually forgotten. His bones rested undisturbed in the primate collections of the Academy of Natural Sciences in Philadelphia for over half a century.

Then, in 1951, Dr. T. Dale Stewart, U. S. National Museum anthropologist, reviewed the evidence for the antiquity of man and republished the old 1895 report by Thomas Wilson.

Now come the results of new tests of the fluorine content of the bones of Natchez Man and the giant sloth buried with him.

The 1954 study reported at the meeting found fluorine concentrations "in good agreement" with those found 60 years ago. Conclusion: "The probabilities are in favor of the human and myiodon bones being of the same or similar age."

Science News Letter, April 23, 1955

## VETERINARY MEDICINE

**Vaccine Found for Worst Poultry Disease**

► **THE NATION'S** worst poultry disease, cancer-like visceral lymphomatosis, appears to have been conquered.

A chicken liver vaccine has provided baby chicks with a high resistance or immunity against the infectious, contagious and malignant virus which costs American poultrymen \$50,000,000 a year. The most destructive of all poultry diseases, visceral lymphomatosis or "big liver disease," affects chickens in much the same way cancer affects man.

The vaccine, made from diseased chicken livers, was developed and tested by Dr. B. R. Burmester and associates of the U. S. Regional Poultry Research Laboratory in East Lansing, Mich.

Immunity in the baby chicks was produced by vaccinating the mother hens with a dilute preparation of the virus.

Fourteen highly susceptible White Leghorns were used in the studies. It was found that two-thirds of the chicks hatched

before their mothers were vaccinated died from the disease.

Baby chicks of the same parentage, hatched after their mothers had been vaccinated, fared much better. Only three to 13% died of the virus infection, depending upon the dosage.

Immunity, the scientists believe, is passed from the mother hen to the chicks. Vaccinating the hens causes a build-up of antibodies which are transmitted through the eggs.

The Department of Agriculture scientists caution, however, the vaccine must be further verified and the vaccinating technique greatly simplified. It is not yet available to farmers, nor recommended for use by poultrymen.

Science News Letter, April 23, 1955

## MEDICINE

**Cancer Patients Have More Blood Chemical**

► **A CHEMICAL** difference between the white blood cells of normal persons and of patients with cancer and leukemia was announced at the meeting of the Federation of American Societies for Experimental Biology in San Francisco.

The discovery was made by Dr. Harry W. Waisman, Carl Monder and J. N. Williams of the University of Wisconsin, Madison, Wis.

The difference is in the amount of an enzyme called glutamic acid dehydrogenase. This enzyme chemical is concerned with the breakdown of the essential amino acid, glutamic acid, a protein building block.

The enzyme is found in the white blood cells of both cancerous and healthy persons. But it is present in greatly increased amounts in patients with cancer and leukemia, the cancer-like blood disease with too many white cells.

The enzyme is not found in red blood cells or blood plasma.

Science News Letter, April 23, 1955

## CHEMISTRY

**Sugar and Fat Make Super-Soap**

► **SUGAR AND** fat make super-soap for use as heavy-duty detergents. Pure compounds of sugar with each of the fatty acids usually used for soap making were formed in research reported in Cincinnati in order to learn the detergent action of each.

Possibility of using this country's excess fat, formerly consumed in soap-making, in the new sugar compound is foreshadowed in the researches reported by Dr. Foster Dee Snell, Foster D. Snell, Inc., New York, to the American Chemical Society meeting.

For practical use, mixtures of fats, as they come from the slaughter houses, were found to excel the pure fatty acid compounds.

Science News Letter, April 23, 1955

**IN SCIENCE**

## PHYSIOLOGY

**Foresee New Danger In Blood Transfusions**

► **A POTENTIAL** new danger in blood transfusions is foreseen by Dr. Merwin Moskowitz of Purdue University, Lafayette, Ind.

The danger concerns stored blood. Such blood, if stored for a long time, may sensitize a person getting it so that he would get a reaction if given another transfusion of stored blood. The danger would come, Dr. Moskowitz points out, if a way is found to preserve blood for two or three months, longer than is now possible.

Red blood cells that have been stored, he reported in *Nature* (April 2), are changed so that they will sensitize a person to his own stored red cells.

Science News Letter, April 23, 1955

## MEDICINE

**Do-It-Yourself Vogue Goes to Face Lifting**

► **THE "DO-IT-YOURSELF"** vogue is now being extended to face lifting. Once the province of plastic surgeons, the lifting to remove unwanted wrinkles and lines can be done without operation and at home.

The method, devised by a plastic surgeon of Beverly Hills, Calif., is reported in the *Eye, Ear, Nose and Throat Monthly* (March).

"A Prosthetic Device for Facial Rhiti-dosis" is the title given the home face-lift apparatus by its inventor, Dr. Adolph M. Brown.

It consists of small oval cloth tabs cemented to the skin by polyvinyl butyral adhesive. One goes at each side of the head just in front of the ear at the hairline, but on a hairless bit of skin. To these are hooked metal hairpin-like pieces. Between each of these "metal members" stretches a four-strand rubber elastic.

The elastic is tightened to pull up the skin, smoothing away wrinkles, just as the surgeon would in a plastic operation. Wearers are cautioned not to pull so tight that the fold of skin between cheek and nose would be obliterated. The hair is then combed back over tabs, metal pieces and elastic.

The elastic pulls the cheeks "smooth and youthful in contour," Dr. Brown reports.

The apparatus can be worn comfortably for a day or two and removed and reapplied. The adhesive comes off with isopropyl alcohol or acetone, often used to remove fingernail polish. Polyvinyl butyral, Dr. Brown says, is relatively unlikely to cause allergic reactions.

Science News Letter, April 23, 1955



# ICE FIELDS

## DENTISTRY

### Cut Tooth Decay by Fluoride in Salt

► THE HEALTHY teeth of people living in Delhi, India, may give us another way to fight tooth decay. The method would be to put fluoride in table salt instead of in drinking water.

Studies suggesting this were reported by Dr. James H. Shaw of the Harvard School of Dental Medicine, Boston, at the meeting of the Federation of American Societies for Experimental Biology in San Francisco.

Working with two graduate students, Om P. Gupta and Margaret Meyer, Dr. Shaw analyzed the enamel and dentin (tooth tissue) of teeth extracted in a Delhi, India, dental clinic. They found the average fluoride content in the enamel was three-hundredths of one percent and in the dentin, seven-hundredths of one percent. Both levels are sufficient to retard decay.

Use of a mixture of salts prepared by evaporation of sea water, Dr. Shaw believes, may be the reason. He estimated that the incidence of tooth decay among the people of India was about one-third to one-fourth that of the people in the United States.

"The Indian Sea salt, which is prepared from sea water and is not further processed," Dr. Shaw said, "evidently supplies as much fluoride as would be supplied by drinking water containing between 2.5 and 3.5 parts of fluoride per million parts of water."

"This is one of the first major evidences we have had that fluoride-containing substances other than water can aid in the prevention of dental caries."

Science News Letter, April 23, 1955

## NUTRITION

### Vitamins Are Destroyed By Ethylene Oxide

► USING ETHYLENE oxide gas for heatless sterilization of foods to preserve them may reduce their nourishing value, studies at the National Institutes of Health, Bethesda, Md., show.

Rats on diets of food that had been treated by this gas lost weight and some died, the scientists found. The "severe damage" to the food was destruction of its thiamine, or vitamin B-1 content. Two other B vitamins, riboflavin and niacin, are probably also destroyed.

Whether the gas would have this effect on foods intended for humans has not yet been tested. The scientists warn that such tests should be made before treating the foods, particularly foods that are a major source of essential nutrients. Flour, cereal

and bakery products are foods for which ethylene oxide treatment has been suggested. These foods, particularly if enriched, may be major sources of vitamin B-1 for people on limited incomes.

The rat studies are reported by Dr. Olaf Mickelsen of NIH and Dr. Edgar A. Hawk, now at the Upjohn Company's medical department in Kalamazoo, Mich., in *Science* (March 25).

Science News Letter, April 23, 1955

## OCEANOGRAPHY

### Caribbean Warmed Up Suddenly 10,000 B.C.

► SUDDENLY ABOUT 12,000 years ago the waters of the Caribbean Sea warmed up to about the temperatures of today. Previously for a long period they had been about nine degrees Fahrenheit colder.

This climatic variation is revealed by radiocarbon dating of deep-sea sediments reported by Drs. Meyer Rubin and Hans E. Suess of the U. S. Geological Survey, Washington, to *Science* (April 8).

The rate of deposition of the calcareous sediments formed from Foraminifera shells is faster with warmer water. How fast the calcium carbonate deposits are laid down is told by ages of the radiocarbon in them.

Radiocarbon datings in the U. S. Geological Survey laboratory are also being used to explore sea-level changes and to compare evidences of man in America with archaeological sequences in Europe, Asia and Africa. The times of glacial advances are being determined.

Science News Letter, April 23, 1955

## BOTANY

### Poisonous Mushrooms Told by Color Test

► A SIMPLE color test to detect mushroom poison has been developed by Drs. S. S. Block, R. L. Stephens, A. Barreto and W. A. Murrill of the University of Florida.

The test is for amanita poisons which are in the mushrooms that cause 90% of mushroom poisoning deaths. About 50 of these are reported to occur each year in the United States.

A violet color in the test means amanita chemicals. A bright blue color means a chemical called phalloidine. The two amanitines and phalloidine in mushrooms affect the liver, kidney and heart.

Any technician can perform the simple test in about one hour. The mushrooms are minced and after alcohol extraction and evaporation, a chromatogram on filter paper is prepared from the residue. The chemicals that bring out the color are cinnamaldehyde and concentrated hydrochloric acid.

The test will detect the poison in as little as a tenth of a gram of fresh mushrooms. (It takes almost 30 grams to make an ounce). Details of the method are given in a report in *Science* (April 8).

Science News Letter, April 23, 1955

## PUBLIC SAFETY

### In Atom Attack Doorman May Save Your Life

► IF AN enemy should ever make an atomic attack on your city, you may owe your safe escape not to an air raid warden, but to a building guard or elevator operator.

That such strategically placed people can emerge in time of emergency as unofficial leaders was observed during a simulated atomic attack in Philadelphia. Results were reported to a meeting of the Eastern Psychological Association in Philadelphia by Drs. Elliott R. Danzig and Arthur I. Siegel of the Institute for Research in Human Relations, Philadelphia.

The scientists posted trained observers at elevators, exit doors, revolving doors and other spots where crowds would be trying to get out and where excited people might cause a panicky jam-up of movement.

The gate keeper, building guard, and elevator operator or dispatcher did show up as potential leaders in time of emergency. And the crowds showed themselves as willing to cooperate with such natural leaders.

Altogether, 25,000 citizens of Philadelphia took part in the drill. Of these, 40 people were observed as potential leaders.

Science News Letter, April 23, 1955

## GENERAL SCIENCE

### Floating Ice Island Will Be Occupied Soon

► AN ICE island in the Arctic will be occupied by an Air Force expedition as a floating laboratory for scientific studies of the Far North.

The huge ice mass, about nine miles long, is known as T-3 or Fletcher's Island. Abandoned on May 14, 1954, Air Force scientists plan to reoccupy it until next September. Their goal is to find out whether it is entirely land-locked, or is resuming its drift down the Greenland coast.

Albert P. Crary, an Arctic expert of the Air Force Cambridge Research Center, Cambridge, Mass., will lead the expedition. Accompanying him will be Norman Goldstein from the same laboratory and Charles Horvath, a marine biologist from the University of Southern California.

T-3 is one of three such islands discovered by Air Force personnel on flights over the Arctic Ocean to the Pole from Alaska. The others, T-1 and T-2, have not been occupied. These ice islands are believed to have broken off from a huge ice shelf on the coast of Ellesmere Island off the northern coast of Greenland.

Later searches of the area have not revealed other similar islands.

The scientists will study the island through surface and sub-surface observations. They will take samples of the marine life, and make gravitational, magnetic and oceanographic studies.

Science News Letter, April 23, 1955

## ASTRONOMY

# Mercury Visible Briefly

About May 21 will be the year's best chance to view the solar system's innermost planet. Mercury is difficult to see because of its closeness to the sun.

By JAMES STOKLEY

► TO THE three planets shown on our star maps as being visible on May evenings, a fourth will be added about May 21, as Mercury moves into position to afford us the year's best view.

On that date this planet, nearest of all to the sun, will be farthest to the east of the sun. Hence it will remain visible for the longest time after sunset—a little less than two hours.

Mercury will then set at just about the time that the sky becomes quite dark so one should look for it in the twilight, perhaps half an hour after the sun has set. It will be visible as a bright star, very low in the sky, and about a quarter of the way from the western point of the horizon around to the north point.

For several days near the 21st it will thus be visible, so one might start looking for it about May 15 or 16.

Positions of other May evening planets are shown on the accompanying maps, which give the appearance of the sky at about 10:00 p.m., your own kind of standard time, on the first of May, and an hour earlier at the middle.

Brightest planet is Jupiter, to the west in Gemini, the twins, to the left of Castor and Pollux. As darkness falls, it is seen in the southwest; it sets around midnight.

## Mars in Taurus

Below Gemini Mars is shown, in Taurus, the bull, although very little of this constellation remains in view. Both its great distance from earth and its lowness in the sky combine to make Mars quite faint. Incidentally, its position is a little above that of Mercury around May 21.

These planets are all bodies like the earth, which revolve around the sun, shining by the sunlight they reflect. The stars, on the other hand, are distant suns, each shining by its own light. Brightest of those now visible in the evening is Vega, in Lyra, the lyre, seen to the northeast.

Below this is Cygnus, the swan, with Deneb, a first magnitude star that, like Mars, is dimmed by reason of its low altitude.

Several stars of the first magnitude appear in the south. One, high in the southwest, is Regulus, in Leo, the lion. Next to this group, to the left, we see Virgo, the virgin, in which Spica shines.

Next to and somewhat below Virgo is

Libra, the scales, where Saturn stands, but which contains no first magnitude stars. And next in line, lower down, we come to part of Scorpius, the scorpion, which has appeared above the horizon, with first-magnitude Antares, also fainter than it should be because it is so close to the horizon. Above the eastern end of Virgo is Bootes, the bear-driver, with brilliant Arcturus.

Near Jupiter, in the northwest, is another star of the first magnitude, Pollux, one of the twins, Gemini. A little lower, and farther right, is Auriga, the charioteer, with Capella.

High in the north is the Great Dipper, part of Ursa Major, the larger bear, one of the circumpolar constellations which, in our latitudes, never set below the horizon. Draco, the dragon, Cepheus, the king, and Cassiopeia, the queen, as well as Ursa Minor, the smaller bear, with the pole star, are all circumpolar.

## Five Visible Planets

We have mentioned four planets, but there are five which are visible to the naked eye. The fifth is Venus, now a morning star, shining brilliantly low in the east just before the sun rises.

Of all these naked eye planets, the hardest to see is Mercury, on account of its closeness to the sun. Its average distance from that body is 36,000,000 miles compared with 93,000,000 for the earth.

As it revolves about the sun once every 88 days, we see it sometimes to the east of the sun and sometimes to the west. Its angular distance, in the vault of the sky, may at such times be as much as 28 degrees, which is a little less than a third of the way from the horizon to the zenith. Gen-

erally it is less. The greatest elongation to the east that Mercury reaches this month (on May 21) is somewhat over 22 degrees.

Each day the earth turns once on its axis, from west to east, and this makes the sun, as well as other heavenly bodies, seem to move across our sky from east to west. Thus, when Mercury is at its greatest eastern elongation, as it is in May, it follows the sun across the sky and remains visible in the west after sunset. Since, at the most, it cannot be more than 28 degrees away from the sun, it can never stay in the sky very long after sunset, never long enough to remain visible when dusk is over and the sky is dark.

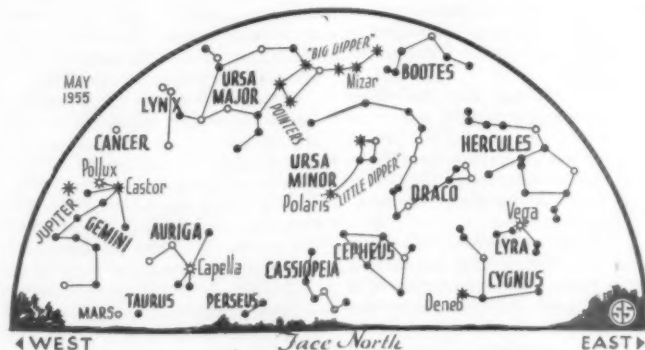
After this greatest eastern elongation, Mercury swings between the sun and earth and is no longer visible. But when it passes to the west of the sun, and reaches greatest western elongation, as it will in July, it precedes the sun in the daily procession across the sky, rising in the east before sunrise.

## Mercury Above Sun

However, this is not the whole story of the factors that makes it easily visible. At a greatest eastern elongation in the spring, like the one this May, Mercury is nearly above the sun. Its separation from that body is most effective in delaying its setting after sunset.

At a fall elongation, on the other hand, it may be the same distance away from the sun but is toward the south instead of above, and it sets very soon after sunset. Thus a spring eastern elongation affords the best time to see Mercury in the evening and, conversely, a western elongation in the autumn is best for morning viewing.

Saturn, at an average distance of 886,000,000 miles, is the farthest of the naked eye planets. Next is Uranus, 1,783,000,000 miles out, which was discovered by Sir William Herschel in 1781. It is sixth magnitude, just about the faintest that can be





\* \* \* SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

seen with the naked eye under the most favorable conditions, but these do not prevail around a large city. However, even there, on a clear night it should be possible to see Uranus with a pair of binoculars, or even opera glasses, if one knows where to look.

In May we are provided with a convenient guide with which to find Uranus, namely Jupiter, which passes its brother planet on the afternoon of May 10 at 4:00 p.m. EST.

When closest, Uranus is only one minute of arc to the north, a distance only a thirtieth of the apparent diameter of the moon. By that evening, of course, they will have moved apart a little, but will still be close. So take a pair of opera glasses on the evening of May 10 and look at Jupiter, the brightest star or planet in the sky. The much fainter body nearby will be Uranus.

### Celestial Time Table for May

May	EST	
4	early a.m.	Meteors visible radiating from constellation of Aquarius.
6	5:14 p.m.	Full moon.
7	1:22 a.m.	Moon passes Saturn.
8	7:00 p.m.	Moon farthest, distance 252,300 miles.
9	1:00 a.m.	Saturn nearest, distance 825,900,000 miles.
10	4:00 p.m.	Jupiter passes Uranus.
14	8:42 p.m.	Moon in last quarter.
19	8:43 p.m.	Moon passes Venus.
21	3:58 p.m.	New moon.
	5:00 p.m.	Mercury farthest east of sun.
	11:00 p.m.	Moon nearest, distance 220,100 miles.
23	5:26 a.m.	Moon passes Mercury.
	1:07 p.m.	Moon passes Venus.
25	12:16 p.m.	Moon passes Jupiter.
28	9:01 a.m.	Moon in first quarter.

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, April 23, 1955

### PSYCHOLOGY

## Tactile Sense Loss in Brain-Injured Veterans

► VETERANS SUFFERING from a penetrating injury in the brain lose their ability to learn a pattern through the sense of touch.

Experiments with 53 men with such injuries were reported to the Eastern Psychological Association in Philadelphia. Each patient reached under a curtain into a box. There a metal pattern mounted on a wood block was placed in his palm. Then he was required to choose from among six other patterns the one that felt like the sample.

He was given three trials and any improvement in matching up the patterns was noted.

Those with an injury on one side of the brain did not improve with repeated trials with the opposite hand—that controlled by the injured side of the brain.

Men injured on both sides of the brain showed no improvement with either hand.

A comparison group of veterans with no brain injury but only leg wounds showed learning with both hands.

The loss of touch learning ability showed up in the brain injured group whether or not they had suffered any noticeable sensorimotor defect.

The study was reported by Drs. Lila Ghent, S. Weinstein, Josephine Semmes and H. L. Teuber, of the New York University College of Medicine.

Science News Letter, April 23, 1955

Milk has a higher percentage of solids than carrots, beets, onions or tomatoes.

### CHEMISTRY

## Material Resistant to Acid

► AN IVORY-LIKE substance similar to graphite in resistance to acids was announced as a new material with unusual properties at the meeting of the American Chemical Society in Cincinnati, Ohio.

Chemically it is boron nitride. Besides being white instead of black, boron nitride differs also from graphite in its high electrical resistivity. Its structural strength is greater than that of graphite at low temperatures, although it is somewhat weaker at high temperatures.

It can be heated to 700 degrees centigrade, nearly 1,300 degrees Fahrenheit, without burning, and oxidizes only slowly from there up to 1,800 degrees Fahrenheit. It is resistant to corrosive chemicals.

Boron nitride was prepared by the Carborundum Co., Niagara Falls, N. Y., and was described to the meeting by Dr. K. M. Taylor of Carborundum's research and development division.

Other refractory materials described to the meeting as suitable for use at high temperatures or for handling corrosive

liquids were listed as fused oxides of aluminum, calcium, magnesium, thorium and zirconium. Data on how to use them were given by Dr. O. J. Whittemore Jr., of the Norton Co., Worcester, Mass. Carbides of silicon, titanium and zirconium, and borides of carbon, titanium and zirconium were also listed by him as available for similar uses.

Silicon carbide, long known as an abrasive, can be bonded with silicon nitride to form tools and machine parts of intricate shape from acid-spray nozzles, burner tips for acid sludge, immersed thermocouples in corrosive melts, pumps for abrasive slurries, and agitating blades operating under difficult conditions, the meeting was told by Dr. Frank C. Roe of the Carborundum Co., Perth Amboy, N. J.

Science News Letter, April 23, 1955

The *clavicle*, or collar bone, can be dispensed with without any significant impairment of body function, a group of physicians report.

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## MEDICINE

# Hallucinations Banished

► **FRESH TRIUMPHS** for a drug that relieves mental and emotional sickness were reported in the *Journal of the American Medical Association* (April 9).

The drug is chlorpromazine, used also to treat high blood pressure. Mental patients who had not talked for five to 10 years began to talk again after treatment with the drug. Children so acutely upset and badly adjusted that they had to be kept in locked rooms became cooperative and quiet.

Results "justifying a sense of optimism that has rarely resulted" from trial of new methods of treating mental sickness were obtained in treatment of 500 mental patients at Longview State Hospital, Cincinnati, Dr. Douglas Goldman reported.

Within a week nine severely disturbed and sick children showed improved behavior and continued to improve as they continued taking the drug. Dr. Robert L. Gatski of Danville, Pa., and the Governor Bacon Health Center, Delaware City, Del., reported.

Hallucinations, including alcoholic ones, were relieved "almost specifically" early in the treatment, Dr. Goldman found. Wildly excited patients were calmed to some extent almost immediately, though in rare cases electroshock treatments were needed in addition to the drug.

In chronic mental disease, the effects of the drug are "less dramatic," but gratifying results are obtained.

Severe paranoid ideas, such as the patient believing he is under the control of the Communists even with regard to body functions, take a little longer to clear up than the hallucinations.

In some cases chlorpromazine "happily" worked with electroshock or insulin to produce better results than either alone did.

Jaundice, itchy skin rashes and very low blood pressure were among reactions to the drug in some cases. The "most important and frightening" reaction Dr. Goldman reported was agranulocytosis. This is an anemia of the white blood cells which can be fatal. All the reactions, however, could

be controlled by stopping the drug and if necessary giving it again in smaller doses with appropriate treatment to control or ward off the reactions.

Science News Letter, April 23, 1955

## MEDICINE

## Special Sugar Clue to Longer Blood Storage

► **DISCOVERY** OF an enzyme chemical in red blood cells which might lead to means of preserving blood twice as long as now possible was announced at the meeting of the Federation of American Societies for Experimental Biology in San Francisco.

The discovery was made by Drs. Beverly Gabrio, Frank M. Huennekens and Clement A. Finch of the University of Washington.

Previously, they found that the deterioration of stored blood could be retarded by an organic chemical called adenosine.

With the addition of adenosine to the usual blood preservation solution, blood can be stored for at least six weeks, instead of a maximum of three weeks. However, until now, adenosine has proved too toxic for human transfusions.

Drs. Gabrio and Huennekens have found an enzyme in the red cell which will beneficially break down adenosine so that only a non-toxic portion is used in the process.

Science News Letter, April 23, 1955

## PHYSIOLOGY

# Cough Winds Supersonic

► **WHEN** A person coughs, he starts air moving through his windpipe at a speed approaching or exceeding the speed of sound.

By the time the air gets up to the level of the Adam's apple, its speed has dwindled to hurricane velocity of about 100 mph. When it blows out of the mouth, it is moving at the 15 mph of a zephyr, Dr. Benjamin B. Ross of the University of Oregon School of Medicine, Portland, reported at the meeting of the Federation of American Societies for Experimental Biology in San Francisco.

The findings were made while Dr. Ross was working with Drs. Hermann Rahn, Raymond Gramiak and George H. Ramsey at the University of Rochester School of Medicine, Rochester, N. Y. The study started when a physician acquaintance, Dr. Howard G. Dayman of Buffalo, N. Y., noticed by means of a fluoroscope that the lower region of the windpipe of his patients constricted dramatically when they coughed. He mentioned this to Dr. Rahn.

Since a cough is over in one-tenth of a second, a slow motion camera was needed to investigate the mechanics of the cough. The



**PLASTIC TANK DROPPED**—New 225-gallon fuel tank tumbles through the air after being released from an Air Force F-84 fighter. The reinforced glass fiber tank was designed as a substitute for the conventional aluminum one attached to the other wing. Produced by the Molded Products Division of Admiral Corporation, West Chicago, Ill., the new tanks were tested at Wright Air Force Base, Dayton, Ohio.

University of Rochester scientists were able to use an X-ray motion picture camera that takes 60 frames per second, compared to 16 of an ordinary camera.

The big wind down in the windpipe was "clocked" with the aid of a flow-meter placed at the mouth. This instrument measured the volume of air that came out during a cough, and the X-ray motion picture film revealed the simultaneous changes in diameter of the lower windpipe, which was outlined by a radio-opaque liquid inserted by means of a tube and which coated the walls of the windpipe. With an exact knowledge of the amount of air involved and the size of the "tunnel" it was coming through, computing its speed was mathematics.

Science News Letter, April 23, 1955

Camels, yaks, water buffalo, ewes and reindeer are used as a source of milk in some parts of the world.

The oldest tagged halibut ever caught was landed at Seattle in 1950; the fish was about 25 years old and weighed 100 pounds dressed.

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## METEOROLOGY

# "Brain" Tells Weather

Considering effects of sun's heat at the equator and air friction only, electronic computer predicts general weather trends over large area for 30 days in advance.

► AN ELECTRONIC "brain" has forecast large-scale weather patterns 30 days in advance, Dr. Norman Phillips of the Institute for Advanced Study in Princeton, N. J., told SCIENCE SERVICE.

Starting with a mathematical model of the atmosphere in which there was no north-to-south motion at all, he put into the computer information representing the sun beating down near the equator and the frictional forces of air motion.

The machine then calculated temperature and pressure changes according to its instructions. Its results for 30 days later, when drawn on a weather map, looked remarkably like a forecast put out by the Weather Bureau.

He is trying, Dr. Phillips explained, to set up mathematical models by which general atmospheric motions will be predicted accurately, where high and low pressure areas will be located and how they will shift with time.

Assuming parallel wind flow at all latitudes from the equator to the pole, heat and friction information is fed to the machine on a random basis. About 15 hours of computing time are required for it to come up with a pattern resembling usual atmospheric motions. This represents two weeks of weather changes, Dr. Phillips said.

The machine's calculations then show a slowly shifting pattern, corresponding to large-scale variations in weather. So far such predictions have been carried out for 41 days. After this time, the pattern breaks down. By taking into account such factors as the amount of moisture in the air, the effects of mountains and oceans, and seasonal variations in the sun's heating, and by mathematical improvements, Dr. Phillips hopes eventually to predict weather cycles for a year or longer.

Although the information used now is an "idealized mathematical model of atmospheric motion," he said, "there is no doubt that it gives results that are physically real."

To test the formulas used, Dr. Phillips fed the machine information on another random pattern, found the same atmospheric motions resulted after the two-week build-up.

Large eddies in the air, thousands of miles across, are essential to explain the transfer of heat from the warm southern latitudes to cold northern ones. His equations give patterns showing such eddies, he said.

Because the electronic "brain" at the Institute can "remember" only a certain amount of information, Dr. Phillips' mathe-

matical model covers an equator-to-pole area only 6,000 miles wide. Success with it, he is sure, means the world-wide picture could also be obtained.

If his 30-day temperature and pressure chart were for the North American continent, the high pressure area often found over Bermuda would have been in its usual place. His predictions, Dr. Phillips said, did not cover any particular location.

Using electronic computers is a revolutionary method for weather prediction pioneered at the Institute for Advanced Study. The Navy, Air Force and Weather Bureau expect to start issuing daily wind predictions for the United States made with the aid of a giant "brain" in the near future.

Science News Letter, April 23, 1955

## PSYCHOLOGY

## College Students Badly Informed on H-Bomb

► COLLEGE STUDENTS are badly informed about the nature and destructiveness of the hydrogen bomb, Drs. Robert A. Harris, Harold M. Proshansky and Evelyn Raskin of Brooklyn College told the meeting of the Eastern Psychological Association in Philadelphia.

Three out of four of the students questioned reported that they give little or no

thought to the H-bomb, in spite of the fact that they are convinced that another world war is likely to occur within the next ten years. A majority believe that in the event of such a war the hydrogen bomb will be used.

Both exaggeration and under-estimation of the reported effects of the hydrogen bomb are common, the scientists found. More than a third believe that the United States is the only country in possession of this weapon.

The scientists base their conclusions on results of a questionnaire circulated to 200 Brooklyn College undergraduates.

Science News Letter, April 23, 1955

## GENERAL SCIENCE

## Science Fair Group Serves 'Hoppers

► ONE WAY to tackle the grasshopper problem is to serve them French-fried to guests.

This was the tasty treat in store for visitors to the 5th Annual Quadri-County Science Fair held at the high school at Archbold, Ohio.

Described as both "edible and palatable," the hot 'hoppers were whipped up by the Epitaphs Club as a fair treat.

Last year, the same group of gourmets passed out tasty little tidbits of rattlesnake meat to those who came to view the science exhibits.

Two finalists from the Archbold Fair will attend the Sixth Annual National Science Fair sponsored by SCIENCE SERVICE's Science Clubs of America. It will be held at the Case Institute of Technology and Western Reserve University, Cleveland, Ohio on May 12-14.

Science News Letter, April 23, 1955

## New and Different Optical Radioactivity Detector! GEIGERSCOPE



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# Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

**ASTM STANDARDS ON PAINT, VARNISH, LACQUER, AND RELATED PRODUCTS: With Related Information—Committee D-1—American Society for Testing Materials**, 9th ed., 848 p., illus., paper, \$6.00. Some 60 standards in this publication have been approved as Federation Standards.

**THE ACCIDENT—Dexter Masters—Knopf**, 406 p., \$4.00. A novel that tells the dramatic story of the development of the atomic bomb and the men responsible for this achievement and of an accident that cost the life of one of them.

**AERO MECHANIC'S QUESTIONNAIRE: Practical Questions & Answers for Airframe & Powerplant Mechanics with Explanatory Notes—Ralph Rice—Aero Publishers**, 3d ed., 206 p., paper, \$5.00.

**THE AMERICANA ANNUAL: An Encyclopedia of the Events of 1954—Lavinia P. Dudley and John J. Smith, Eds.—Americana Corporation**, 865 p., illus., \$10.00. The biography of an important year.

**APPARATUS FOR MEASUREMENT OF THE WATER VAPOR PERMEABILITY OF PACKAGING MATERIALS—P. P. Templin, J. J. Kaufman and R. G. Capell—Mellon Institute**, 2 p., illus., paper, free upon request direct to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa. A small humidity cabinet employing acid solutions to control humidity has been found good for routine testing and also research.

**BASIC VACUUM TUBES AND THEIR USES—John F. Rider and Henry Jacobowitz—Rider**, 204 p., illus., paper \$3.00, cloth \$4.50. An elementary book for the general reader and elementary technical student.

**THE BLACK FLIES (DIPTERA, SIMULIDAE) OF GUATEMALA AND THEIR ROLE AS VECTORS OF ONCHOCERCIASIS—Herbert T. Dalmat—Smithsonian**, 425 p., illus., paper, \$5.00. This parasitic disease is transmitted by man to the black fly that bites an infected person and in turn transmitted by the fly to another person. Spread is aggravated by migratory workers and itinerant salesmen and by people who walk to their work in the fields when flies are active.

**CASIMIR FUNK, PIONEER IN VITAMINS AND HORMONES—Benjamin Harrow—Dodd, Mead**, 209 p., illus., \$4.00. The scientist whose life is here recounted is credited with invention of the

word "vitamin" and with the isolation of nicotinic acid, later found to be an anti-pellagra factor.

**COMMUNISM, CONFORMITY, AND CIVIL LIBERTIES: A Cross-section of the Nation Speaks Its Mind—Samuel A. Stouffer—Doubleday**, 278 p., illus., \$4.00. Report of a poll showing that when people move about freely, as Americans do, this tends to make them familiar with and tolerant of values and attitudes different from those they learned in youth.

**THE CRIME OF GALILEO—Giorgio de Santilana—University of Chicago Press**, 339 p., illus., \$5.75. In this day when some scientists are again being involved in controversy, and when trials such as that of Galileo are common throughout the world, it is interesting to read this review by a historian of science of the events leading up to Galileo's trial, his "confession" and what followed it.

**ECHOES OF THE RED MAN: An Archaeological and Cultural Survey of the Indians of Southern Illinois—Irvin M. Peithmann—Exposition Press**, 134 p., illus., \$3.00. Everyone who, as a child, picked up an Indian "arrowhead," will have interest in this account of the prehistoric Indian.

**ELECTRONS, ATOMS, METALS AND ALLOYS—William Hume-Rothery—Iliffe (Philosophical Library) rev. ed.**, 387 p., illus., \$10.00. Presented for industrial readers in the form of an informal conversation which may give the American reader the impression that he is listening in on the talk of English scientists.

**FLIGHT HANDBOOK: The Theory and Practice of Aeronautics—Maurice A. Smith, Ed.—Iliffe (Philosophical Library)**, 5th ed., 282 p., illus., \$6.00. This handbook produced by the staff of the British journal "Flight," is completely rewritten and greatly enlarged.

**FORBIDDEN LANDS—Gordon Cooper—Philosophical Library**, 165 p., illus., \$4.75. In spite of the immense strides made in transportation, more of the world is now closed off from the traveler than ever before in time of peace. The author took advantage of the time between two world wars to travel in some of these forbidden places and inaccessible spots.

**HIGHLIGHTS OF SCIENCE—Harry Bates Brown—Vantage**, 213 p., \$3.50. A general book on science for the beginning student and the general reader rushed for time.

**THE HORSE IN BLACKFOOT INDIAN CULTURE: With Comparative Material From Other Western Tribes—John C. Ewers—Govt. Printing Office, Bureau of American Ethnology, Bulletin 159**, 374 p., illus., \$2.75. Indians did not know the horse until the white man came to America, but the horse reached the Blackfoot country before the white man. After this early introduction, this nomadic, buffalo-hunting tribe speedily adopted the horse as its own.

**HOW TO HELP YOUR HANDICAPPED CHILD—Samuel M. Wishik—Public Affairs Committee, Public Affairs Pamphlet No. 219**, 28 p., illus., paper, 25 cents. Describing what can be done to remedy physical defects and to insure the development of a healthy personality.

**HOW TO WATCH BIRDS—Roger Barton—McGraw-Hill**, 229 p., illus., \$3.50. The newspaper writer, author of a Nature column, here gives useful information to the bird watcher and the person who is ready to set out a feeder and wants to know what visitors to expect.

# Questions

**AERONAUTICS—How does the pilot of the new "flying platform" steer the device?** p. 258.

□ □ □

**ANTHROPOLOGY—How long ago did Natchez Man live?** p. 264.

□ □ □

**ASTRONOMY—What is the newly determined distance of the Andromeda nebula?** p. 262.

□ □ □

**MEDICINE—What device was used to amplify squeaks in bone joints?** p. 263.

□ □ □

**PHYSIOLOGY—How does the Air Force "map" the curves of the human head?** p. 261.

□ □ □

**Photographs: Cover, Parks, Davis and Co.; p. 258, U. S. Navy; p. 261, Lt. Frank P. Saul; p. 263, McMath-Hulbert Observatory; p. 268, Admiral Corporation; p. 272, Bakelite Co.**

**AN INTRODUCTION TO STOCHASTIC PROCESSES: With Special Reference to Methods and Applications—M. S. Bartlett—Cambridge University Press**, 312 p., \$6.50. Of interest to statisticians as well as to engineers, biologists and other scientists.

**INTRODUCTORY APPLIED PHYSICS—Norman C. Harris and Edwin M. Hemmerling—McGraw-Hill**, 729 p., illus., \$6.75. Material for a course intended to train technicians in the junior college.

**JUSTIFYING THE PERSONNEL PROGRAM: Costs—Budgets—Evaluation—Walter H. Powell and others—American Management Association, Personnel Series, Number 160**, 51 p., paper, \$1.75.

**MARK TRAIL'S BOOK OF NORTH AMERICAN MAMMALS—Ed Dodd—Hawthorn**, 242 p., illus., \$1.95. Followers of the author's newspaper strip will recognize the style in these nature drawings.

**MATHEMATICAL FOUNDATIONS OF QUANTUM MECHANICS—John von Neumann, translated from the German by Robert T. Beyer—Princeton University Press**, 445 p., paper, \$6.00. The translated manuscript has been carefully revised by the author.

**MECHANISMS OF MICROBIAL PATHOGENICITY: Fifth Symposium of the Society for General Microbiology Held at the Royal Institution, London, April 1955—G. C. Ainsworth and others—Cambridge University Press**, 333 p., \$5.00. Dealing with a range of bacteria, protozoa and fungi pathogenic to man, animals and plants.

**OUR NATIONAL FORESTS—Bernard Frank with foreword by William O. Douglas—University of Oklahoma Press**, 238 p., illus., \$4.00. The national forests, the author points out, are more than just beautiful, unspoiled picnic grounds; under public control they stand guard over our treasure of natural resources.

**PARKING REQUIREMENTS IN ZONING ORDINANCES: A Supplement to Bulletin 24—David R. Levin—Highway Research Board, Bulletin 99**, 55 p., paper, 75 cents.

**PERSONNEL MANAGEMENT IN A COMPETITIVE ECONOMY: With a Section on Employee Education and Community Relations—John E. Martin and others—American Management Association, Personnel Series 159**, 56 p., paper, \$1.75.



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**THE PILTDOWN FORGERY**—J. S. Weiner—*Oxford University Press*, 214 p., illus., \$3.50. Reporting an investigation into how the Piltdown hoax was perpetrated on the scientific world. By one of the scientists who exposed the forgery.

**PROTECTIVE COATINGS FOR METALS**—R. M. Burns and W. W. Bradley—*Reinhold*, 2d ed., 643 p., illus., \$12.00. A description of modern advances and a review of historical developments in the field, beginning with earliest records.

**REMEMBERING MADE EASY**—Arthur L. Logan—*Arco*, 94 p., illus., \$2.50. You must first want to remember, but if you have the desire the author offers you several systems of repetition and association to use as crutches to support your memory.

**ROALD AMUNDSEN: A Saga of the Polar Seas**—J. Alvin Kugelmass—*Messner*, 191 p., illus., \$3.00. A newspaper and magazine writer tells the dramatic story of the life of the explorer.

**THE ROCKET PIONEERS ON THE ROAD TO SPACE**—Beryl Williams and Samuel Epstein with foreword by Andrew G. Haley—*Messner*, 241 p., illus., \$3.75. The story of the pioneers from 18th century William Congreve and his war rocket to the developers of the V-2.

**THE SAGA OF THE GREY SEAL: Introducing the Natural History of the Grey Seal of the North Atlantic**—R. M. Lockley—*Devin-Adair*, 149 p., illus., \$4.00. The adventurous story of a trip by tiny Irish-built curragh, or long canoe, to the secret breeding place of the seals.



**Towhee**

► HE IS dodging in and out among the undergrowth, and if you do not get a good look at him, you will surely call him a robin. For his back and tail and head are dusky, and the sides of his breast are the terra-cotta red of the American robin's. And he has a brisk, cheerful, tail-flicking way of hopping about that makes you think of that most familiar of our birds of spring.

But if you look a little closer, you can see that his duskiness above is deeper than that of a robin, and that the red does not run all over his breast, but gives way to a wide apron or bib of white underneath. Along his wings also, when they are folded, is a betraying line of white that marks him as not a robin.

The towhee is a bird of many aliases. "Ground robin" is a popular name, and

SLIM GREEN—Louise Dyer Harris and Norman Dyer Harris—*Little, Brown*, 53 p., illus., \$2.00. A child's story book that tells of the ways of a little green snake.

**A SYSTEMATIC METHOD FOR LOCATING INSTANT CENTERS**—Willard C. Lyford and Leo A. Padis—*Virginia Polytechnic Institute, Engineering Experiment Station Series No. 97*, 21 p., illus., paper, 25 cents. A method to aid the mechanical engineer in locating these centers and a presentation of the theory on which this method is based.

**TV REPAIR QUESTIONS AND ANSWERS ON FRONT ENDS**—Sidney Platt—*Rider*, 122 p., illus., paper, \$2.10. A practical book for the technician.

**THE TREE OF CULTURE**—Ralph Linton—*Knopf*, 692 p., illus., \$7.50. The author intended this book to express the concepts and data he had acquired during his 40 years of work in the field. The work was nearly completed when Dr. Linton died in 1953, and his wife completed it from his notes and lectures.

**TUMOR-HOST STUDIES: The Physiological and Pharmacological Action of an Iodide-trapping Substance Formed in Tumor-bearing Animals**—Kenneth G. Scott and Chin-Tzu Peng—*University of California Press, Publications in Pharmacology*, Volume 2, No. 22, 31 p., illus., paper, 75 cents. A study of abnormal iodine metabolism and its relation to tumor growth.

Science News Letter, April 23, 1955

justified by his deceptively robin-like appearance. And, since he is frequently mistaken for an oriole, he might well be called a "ground oriole," too, though he is not.

The other name by which this bird is commonly known is "chewink." The two names, towhee and chewink, are intended to represent the bird's characteristic call—an interesting illustration of how differently two people can hear the same syllables.

Other names by which he is known include swamp robin, joree, bush-bird and turkey sparrow.

Like many another bird of the forest edges, the towhee is a useful servant of man in his destruction of insects and their larvae. The towhee gets in his good work at the strategic moment, for his scratching about in the dead leaves of springtime turns up the six-legged destroyers by the dozen and hundreds, just at the beginning of insect breeding time and before they have a chance to lay their eggs. Thus parent insect and brood are destroyed at one gulp, and a stitch in time saves many times nine.

The towhee's way of scratching on the ground is peculiar, and an aid in distinguishing it from other birds. The towhee scratches by using his feet alternately, after the manner of hens. Another unusual characteristic of the towhee that some bird watchers have noted is an apparent nonchalance when his nest is approached.

It could be that this is the bird's way of deceiving the intruder—a deliberately assumed role!

Science News Letter, April 23, 1955

The *hornbill*, an African bird, walls herself up with mud inside a hollow tree at nesting time, leaving only a small hole through which her mate feeds her and the young.

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✿ **OSCILLATING FAN** for the coming hot weather is entirely housed in a tough plastic with a metal grille. The 10-inch fan, unlike others, employs a drive mechanism rather than gears. Four moving vanes inside provide a wide sweep, or they can be stopped to send the air in only one direction. A topside knob is turned to convert it from straight-blow to oscillating.

Science News Letter, April 23, 1955

✿ **SAFETY LOCK** requires no tools, cutting, drilling or screws. It can be installed permanently or temporarily on any inward opening door by placing the lock on the jamb and closing the door. Grippers hold the lock in place. It is small enough to be carried while traveling.

Science News Letter, April 23, 1955

✿ **FAUCET HEATER** converts cold water taps into hot water faucets automatically and instantaneously. Weighing only three pounds, the water-heating device can be attached to faucets up to 15/16 inch in size. Temperature of the water is controlled by the faucet's handle.

Science News Letter, April 23, 1955

✿ **BABY BATHTUB**, available in pink, blue, yellow and white, is molded of tough and easy-to-clean plastic. The soft surface



is gentle for both the baby and the table upon which the tub rests. With a rolled rim for easier handling when full, the tub, shown in the photograph, is 23 3/4 inches long, 16 inches wide and 5 3/4 inches deep. It weighs 1 3/4 pounds when empty.

Science News Letter, April 23, 1955

✿ **NON-OILY** penetrant for loosening corroded nuts or bolts is an odorless chemical

formulation that is nonflammable. Available in half-pint and pint containers, the penetrant is applied and allowed to act for several minutes. Metal parts which have become frozen are then tapped and disassembled.

Science News Letter, April 23, 1955

✿ **RIDING SULKY** attached to a power mower allows the Sunday lawn-cutter to sit and cut in comfort and with ease. Steered with either handles or foot-controls or both, the sulky and mower can be turned in a 36-inch circle. The sulky can be adapted to fit most other standard power mowers, and is available separately.

Science News Letter, April 23, 1955

✿ **MERCURY BATTERY**, smaller than a dime, provides a low-drain power source for many types of electronic equipment. Measuring only .225 inch in height and .605 inch in diameter, the miniature battery weighs 4.5 grams. It can be used in testing devices, circuits, communications, digital computers and radiation detection instruments.

Science News Letter, April 23, 1955

✿ **REVERSIBLE COLOR** film is three times faster than regular color film with a daylight exposure index of 32. Described as giving truer color reproduction, the new high-speed daylight film can be exposed indoors with electronic flash or blue flash-lamps.

Science News Letter, April 23, 1955

## CITY DWELLER?

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## Do You Know?

The average physician who works 60 hours a week, spends about 10 hours a week keeping up with developments in his field.

The first American helicopter was flown in 1922, but not until 1953 did the production of civil helicopters exceed 100 annually.

A cup of cottage cheese, if used without being creamed, has five times as much protein and one-third the calories of a cup of milk.

Hogs were found to gain weight more quickly and more economically if they had plenty of fresh water during freezing weather.

A cow in the shade can be worth five in the sun; tests show that milk production can vary from 7.1 pounds in 105 degrees Fahrenheit temperature to 35.5 pounds at 51 degrees.

Science News Letter, April 23, 1955